AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A robot for a production machine, comprising:

a rotation drive unit disposed on a support base;

a first arm, a proximal end portion of the first arm being fixed to a rotary shaft of the rotation drive unit;

a first proximal-side pulley disposed coaxially with the rotary shaft and fixed to the support base;

a second proximal-side pulley fixed to a distal end portion of the first arm;

an intermediate shaft rotatably supported on the distal end portion of the first arm, the intermediate shaft penetrating a center portion of the second proximal-side pulley;

a first distal-side pulley provided integrally with the intermediate shaft;

a first rotation transmission section for drivingly connecting the first distal-side pulley and the first proximal-side pulley;

a second arm, a proximal end portion of the second arm being fixed to the intermediate shaft;

a distal-side shaft rotatably supported on a distal end portion of the second arm;

a second distal-side pulley provided integrally with the distal-side shaft;

a second rotation transmission section for drivingly connecting the second distal-side pulley and the second proximal-side pulley; and

a chuck fixed to the distal-side shaft,

wherein the second arm rotates over an angle twice that over which the first arm rotates, and the chuck rotates over an angle one-half that over which the second arm rotates so that the chuck assumes a constant orientation and passes over the first proximal-side pulley when the rotation drive unit is operated, and tooth-number ratio between the first proximal-side pulley and the first distal-side pulley is set to n:1, and the tooth-number ratio between the second proximal-side pulley and the second distal-side pulley is set to 1:m, and

when the first arm and the second arm are extended to position the chuck at a center of the production machine, an end of the first arm connected to the second arm via the intermediate shaft and substantially an entire length of the second arm ~~extends~~ extend between tie bars of the production machine ~~and~~, so that the end portion of the first arm and substantially the entire length of the second arm ~~is substantially~~ are overlapped between a movable mold and a stationary mold of the production machine.

2. (Original) A robot for a production machine according to claim 1, wherein the tooth-number ratio between the first proximal-side pulley and the first distal-side pulley is set to 2:1.

3. (Original) A robot for a production machine according to claim 1, wherein the tooth-number ratio between the second proximal-side pulley and the second distal-side pulley is set to 1:2.

4. (Original) A robot for a production machine according to claim 1, wherein the distance between the center of the second proximal-side pulley and the center of the second distal-side pulley is set to be equal to the distance between the center of the first proximal-side pulley and the center of the first distal-side pulley.

5. (Original) A robot for a production machine according to claim 1, wherein the support base is disposed on a bed of an injection molding machine; and the chuck is moved through a space between the upper and lower tie bars.

6. (Original) A robot for a production machine according to claim 5, wherein the support base is supported by a movement mechanism for effecting movement in the front/back direction of the injection molding machine.

7. (Original) A robot for a production machine according to claim 1, wherein a rotation mechanism is disposed at the upper end of an injection molding machine, the rotation mechanism including a horizontal arm whose one end is supported to be rotatable about an axis extending in the vertical direction; the support base is attached to the other end of the horizontal

arm; and the chuck is moved through a space between tie bars disposed at two different positions in the transverse direction of the injection molding machine.

8. (Canceled)

9. (Currently Amended) A robot for a production machine, comprising:

a support base mounted on a bed of the production machine;

a rotation drive unit disposed on ~~a~~ the support base;

a first arm, a proximal end portion of the first arm being fixed to a rotary shaft of the rotation drive unit;

a first proximal-side pulley disposed coaxially with the rotary shaft and fixed to the support base;

a second proximal-side pulley fixed to a distal end portion of the first arm;

an intermediate shaft rotatably supported on the distal end portion of the first arm, the intermediate shaft penetrating a center portion of the second proximal-side pulley;

a first distal-side pulley provided integrally with the intermediate shaft;

a first rotation transmission section for drivingly connecting the first distal-side pulley and the first proximal-side pulley;

a second arm, a proximal end portion of the second arm being fixed to the intermediate shaft;

a distal-side shaft rotatably supported on a distal end portion of the second arm;

a second distal-side pulley provided integrally with the distal-side shaft;

a second rotation transmission section for drivingly connecting the second distal-side pulley and the second proximal-side pulley; and

a chuck fixed to the distal-side shaft,

wherein: the second arm rotates over an angle twice that over which the first arm rotates, and the chuck rotates over an angle one-half that over which the second arm rotates so that the chuck assumes a constant orientation and passes over the first proximal-side pulley when the rotation drive unit is operated,

the tooth-number ratio between the first proximal-side pulley and the first distal-side pulley is set to n:1, the tooth-number ratio between the second proximal-side pulley and the second distal-side pulley is set to 1:m, and the distance between the center of the second proximal-side pulley and the center of the second distal-side pulley is set to be equal to the distance between the center of the first proximal-side pulley and the center of the first distal-side pulley,

~~the support base is disposed on a bed of an injection molding machine, and the chuck is moved through a space between the upper and lower tie bars,~~ and

when the first arm and the second arm are extended to position the chuck at a center of the production machine, an end of the first arm connected to the second arm via the intermediate

shaft and substantially an entire length of the second arm ~~extends~~ extend between tie bars of the production machine, so that an end of the first arm connected to the second arm and substantially the entire length of the second arm ~~is substantially~~ are overlapped between a movable mold and a stationary mold of the production machine.

10. (Previously Presented) A robot for a production machine according to claim **9**, wherein the tooth-number ratio between the first proximal-side pulley and the first distal-side pulley is set to 2:1.

11. (Previously Presented) A robot for a production machine according to claim **9**, wherein the tooth-number ratio between the second proximal-side pulley and the second distal-side pulley is set to 1:2.

12. (Previously Presented) A robot for a production machine according to claim **9**, wherein the support base is supported by a movement mechanism for effecting movement in the front/back direction of the injection molding machine.

13. (Currently Amended) A robot for a production machine, comprising:

a rotational drive unit and a movement mechanism disposed in a pair of support blocks fixed to an upper end of an injection molding machine, rotational drive unit and the movement mechanism being movable in a front/back direction of the injection molding machine;

a rotation mechanism supported by the movement mechanism,

a horizontal arm, the proximal end of which is connected to the rotation mechanism so as to be rotatable about a vertical axis of the rotation mechanism;

~~a rotation drive unit disposed on a support base;~~

a first arm and a second arm, a proximal end of the first arm being ~~portion of the first arm being fixed to a rotary shaft of the rotation drive unit~~ rotatably connected to a distal end of the horizontal arm, and a proximal end of the second arm being rotatably connected to a distal end of the first arm;

~~a first proximal-side pulley disposed coaxially with the rotary shaft and fixed to the support base;~~

~~a second proximal-side pulley fixed to a distal end portion of the first arm;~~

~~an intermediate shaft rotatably supported on the distal end portion of the first arm, the intermediate shaft penetrating a center portion of the second proximal-side pulley;~~

~~a first distal-side pulley provided integrally with the intermediate shaft;~~

~~a first rotation transmission section for drivingly connecting the first distal-side pulley and the first proximal-side pulley;~~

~~a second arm, a proximal end portion of the second arm being fixed to the intermediate shaft;~~

~~a distal-side shaft rotatably supported on a distal end portion of the second arm;~~

~~a second distal-side pulley provided integrally with the distal-side shaft;~~

~~a second rotation transmission section for drivingly connecting the second distal-side pulley and the second proximal-side pulley~~; and

a chuck ~~fixed to the~~ mounted on a distal end of the second arm ~~distal-side shaft, wherein:~~

wherein the first arm, the second arm, and the chuck being rotated with respect to each other in a vertical plane by pulleys of the rotation drive disposed on the proximal and the distal ends of the first arm and the second arm,

the second arm ~~rotates~~ rotating over an angle twice that over which the first arm rotates, and the chuck ~~rotates~~ rotating over an angle one-half that over which the second arm rotates so that the chuck assumes a constant orientation ~~and passes over the first proximal-side pulley~~ when the injection machine ~~rotation drive unit~~ is operated,

~~the tooth-number ratio between the first proximal-side pulley and the first distal-side pulley is set to n:1, the tooth-number ratio between the second proximal-side pulley and the second distal-side pulley is set to 1:m;~~ , and

when the first arm and the second arm are extended to position the chuck at a center of the injection machine, the distal end of the first arm and substantially an entire length of the second arm extend between tie bars of the production machine, so that the distal end of the first arm and substantially the entire length of the second arm are overlapped between a movable mold and a stationary mold of the production machine.

~~a rotation mechanism is disposed at an upper end of an injection molding machine, the rotation mechanism including a horizontal arm whose one end is supported to be rotatable about an axis extending in the vertical direction, the support base being attached to the other end of the horizontal arm, and the second arm and the chuck being moved through a space between the tie bars disposed at two different positions in the transverse direction of the injection molding machine; and~~

~~the rotation mechanism is supported by a movement mechanism for effecting movement in the front/back direction of the injection molding machine~~.

14. (Previously Presented) A robot for a production machine according to claim **7**, wherein the chuck faces a molded product in an approach position, wherein the first arm and the second arm extend along a vertical direction.

15. (Previously Presented) A robot for a production machine according to claim **14**, wherein when the chuck has reached an elevated position, the rotation mechanism rotates the horizontal arm to move the product removal apparatus to a retreated position, and the rotation drive unit rotates the first arm so that the chuck moves downward along the vertical direction.